

# Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

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Vol. 3

October, 1901

No. 34

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## A NATURAL HYBRID BETWEEN HABENARIA LACERA AND H. PSYCHODES.

A. LE ROY ANDREWS.

IN an earlier number of RHODORA (II, 114) I mentioned a form of *Habenaria* which I had noted growing with *H. lacera* and *H. psychodes* as apparently a hybrid between them. This opinion, based merely upon the general appearance of the plant, is sustained, even better than I had anticipated, by minute examination, and I accordingly venture to report results.

The plant was first noticed by Mr. White, a classmate in Williams College, and myself, late in July, 1898. It was at once marked as distinct and, not having seen *H. fimbriata* at that time, we were inclined to treat it as that species with question marks. Its possible hybrid origin, which I suggested in RHODORA, only occurred to me later. Opportunity for further investigation has been lacking until the present summer. On Aug. 5, 1901, the same locality was again visited and specimens of all forms taken. Comparison of the three types yielded the following characters.

*HABENARIA PSYCHODES*, Gray. Lower leaves oblong or oblong-lanceolate, obtuse or acute, broad, length to 20 cm., width to 6 cm., ratio of length to width 3-5 : 1. Raceme cylindrical, densely many-flowered. Flowers rose-purple. Sepals round-oval, obtuse. Lateral deflexed, concave, horizontal, spreading. Petals cuneate-obovate, retuse, denticulate above, surpassing upper sepal in ratio of about 7 : 5. Divisions of lip broadly cuneate, lacerate; fringe of lateral divisions extending generally less than half their length; ultimate segments many, short, acute. Average width of lip 12 mm. Lateral projecting arms of column obtuse or rounded, much thickened.

Glands of pollen-masses oblique, orbicular. Pollen-masses short, thick; stalk  $\frac{1}{2}$  length of mass of pollen or less; pollen yellowish-green. Orifice of nectary unobstructed. Spur longer than ovary, hardly larger below. Ovary short, 7-10 mm.

HABENARIA LACERA, R. Br. Lower leaves lanceolate or linear-lanceolate, narrow, more acute, length to 21 cm., width to 4.5 cm., ratio 5-7 : 1. Raceme elongated, loosely many-flowered. Flowers yellowish-green. Sepals oblong-oval, less obtuse, lateral deflexed, somewhat twisted, vertical. Petals ligulate, obtuse or sometimes slightly emarginate, entire, about equal in length to upper sepal. Average width of lip about 15 mm.; divisions narrow, linear or nearly so, deeply split, fringe of lateral divisions extending more than half their length, ultimate segments few, capillary, long. Arms of column produced, acuminate, not thickened. Glands of pollen-masses facing, oblong-linear. Pollen-masses long, slender club-shaped; stalk as long as or somewhat longer than mass of pollen; pollen golden-yellow. Orifice of nectary obstructed in middle by projection from base of stigma. Spur of about equal length with ovary, incurved, clavate, considerably enlarged below. Ovary long, 12-15 mm.

HABENARIA PSYCHODES × LACERA. Lower leaves as in *H. lacera* length to 15 cm., width to 3 cm., ratio 5-7 : 1. Raceme oblong, loosely fewer-flowered. Flowers white tinted rose to light rose-purple. Sepals round-oval, obtuse, lateral deflexed, plane, vertical. Petals cuneate-spatulate, obtuse or slightly retuse, denticulate above, slightly surpassing upper sepal in ratio of about 6 : 5. Average width of lip about 12 mm. Divisions narrow-cuneate, deeply cleft as in *H. lacera*, few, averaging twice as many as in *lacera*, capillary, long. Arms of column as in *H. psychodes* or slightly more acute. Glands of pollen-masses slightly oblique, elliptical or slightly kidney-shaped. Pollen-masses intermediate in length, club-shaped; stalk  $\frac{3}{4}$  length of mass of pollen or rather more; pollen greenish-yellow. Somewhat two-lobed projection from base of stigma not completely obstructing orifice of nectary in middle as in *lacera*. Spur longer than ovary, clavate, much enlarged below. Ovary short or intermediate, 9-12 mm. Locality—a very wet meadow in Pownal, Vermont, July 22, 1898 (*M. W. White & A. L. Andrews*), Aug. 5, 1901 (*A. L. Andrews*).

In a family of many species, variable and often of close relationship, where moreover cross-fertilization is habitual as in the Orchidaceae, hybridization is occasionally to be expected and experiments with the tropical species under artificial conditions have yielded a long array of hybrids presenting characteristics generally intermediate between those of the parent plants. Botanists have accordingly described peculiar intermediate forms found under proper conditions as probable natural hybrids. So the tribe Ophrydeae to which *Habenaria* belongs has yielded, especially in Europe where represented by many related species, a number of forms which European botanists describe as natural hybrids, mostly in the genera *Ophrys*

and Orchis. So far as I know no orchid hybrid of any sort has been described from the region covered by Gray's Manual. An explanation could readily be found in the paucity of our species, and the fact that closely related sorts do not generally grow in same localities or bloom at same time.

As will be seen from above descriptions the Pownal plant is almost exactly intermediate between the species, having with the general appearance of *H. lacera* the color of *H. psychodes* while the internal organs are like neither, but a modification of both. Its habitat would point toward the same conclusion. The meadow mentioned is a favorite locality of *H. psychodes* and that species is to be found in all parts of it, *H. lacera* on the other hand being less numerous and growing only in certain parts. The form in question was found only where the two species occurred together. That fact is not necessary to our conclusion as the pollen might have been carried by the insect a considerable distance, but was true for all the specimens which I could find.

The form is too far removed from either species to be readily considered a variety of either and neither tends to such variation when growing alone. It can hardly pass as a species unless found independently somewhere. Moreover it is of slender and weakly growth (a frequent though not invariable characteristic of hybrids), hardly growing above the surrounding grass, while the species in same locality are extremely vigorous. To my mind the greatest argument of all is in the partial development of the projection at the mouth of the nectary which in *H. lacera* serves an important purpose as pointed out by Mr. Gibson in Harper's Magazine (Vol. 94, p. 861. A Few Native Orchids and their Insect Sponsors), but which from its partial development can hardly serve any purpose in our form. The glands are peculiar and I examined a number before satisfying myself as to their shape. I found practically no variation.

The pollen masses were also notably different as described. The color of pollen of hybrid was nearer that of *H. lacera* though distinct from both. The capsules seemed to be maturing seed as is frequently the case with orchid hybrids. The fertility and embryological characteristics of the seeds would be an interesting subject for investigation.

All in all the characteristics of the hybrid seem to show a stronger influence of *H. lacera* and slight variations in the type are in the

direction of that species. European botanists customarily consider the stronger parent the staminate one, though I believe horticulturists adduce exceptions.

Localities where *H. lacera* and *H. psychodes* grow and bloom together should be looked over carefully for similar specimens. Until further information is at hand, the above seems the only reasonable disposition of the plant.

WILLIAMSTOWN, MASSACHUSETTS.

### A THIRD NEW ENGLAND STATION FOR ASPLENIUM EBENOIDES.

G. A. WOOLSON.

TO THE devotee of Nature, few pleasures exceed that of a rare "find." For several years I have been looking for *Asplenium ebenoides*, the suspected hybrid of *A. ebenium* and *Camptosorus*. Late one afternoon last fall I found a place within the limits of Proctor, Vermont, which seemed to offer just the proper environment for this interesting plant. In the strength of my convictions that it should occur there, I returned to the spot July 20th, 1901. Although *Asplenium ebenium* and *Camptosorus rhizophyllus* were in abundance upon the slopes of the limestone ridge, it was not until I reached the summit, at an elevation of perhaps 800 feet, that I found the object of my search, but there two small plants of *Asplenium ebenoides* with fronds varying from three to five inches in length, were discovered, snugly tucked down in a pocket of the rock. As a photograph of the environment seemed desirable, Dr. H. H. Swift was pressed into service. This gentleman happened to walk around a rock which I had not explored and found another plant of the same kind and by all odds the finest of the lot. Several of the fronds measured ten inches in length, and one, a six-inch member—was rooting at the apex after the manner of one of its probable progenitors. This plant was sixty-eight feet from the other two, and was growing upon a grassy slope, with an eastern exposure.

Three and a half feet from it was a tangled mat of *Asplenium ebenium* and *Camptosorus rhizophyllus*. A similar mat occurred five feet from the plants in the pocket in the rock, while single specimens